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Ontario. Hydro-Electric Power
[Commission]

RURAL ELECTRICAL SERVICE IN ONTARIO

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A STATEMENT

OUTLINING ITS RELATIONSHIP TO
ELECTRICAL SERVICE IN CITIES AND TOWNS
AND
CORRECTING SOME MISUNDERSTANDINGS

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THE HYDRO-ELECTRIC POWER COMMISSION OF ONTARIO
TORONTO - 1932

A STATEMENT

OUTLINING THE RELATIONSHIP OF
RURAL ELECTRICAL SERVICE IN ONTARIO
TO ELECTRICAL SERVICE IN CITIES AND TOWNS
AND
CORRECTING SOME MISUNDERSTANDINGS

It is clear from letters received in the extensive correspondence of the Hydro-Electric Power Commission of Ontario that there is a misunderstanding on the part of some respecting important aspects of the work of the Commission in the sphere of rural electrical service.

Essentially it appears that certain of the Commission's correspondents variously believe that the cost of electrical service to farmers and others in rural power districts is unduly high; that there is an excessive difference between charges to rural electrical consumers and corresponding charges to the consumers in cities and towns; that the Commission's requirements for new extensions of rural service are insufficiently attractive; and that the Commission could by a change in its policy remedy the conditions which these correspondents believe to exist and regard as inequitable.

The Commission has no hesitation in affirming that the foregoing views are misconceptions. Notwithstanding statements of propagandists and some well-intentioned statements of incompletely informed persons, it is a fact that the rural electrical service provided under the administration of the Commission is unsurpassed for any comparable area and circumstances. The rural electrical consumers do not have less favourable consideration than urban consumers, but, on the contrary,—through Government aid—the rural consumers receive special advantages not conferred upon urban consumers. The requirements for new extensions of rural electrical service in Ontario are at the minimum necessary to protect the consumers themselves. And finally, with regard to the whole question of equitable treatment as between rural consumers and urban consumers, it may be stated that the Commission is bound by law to administer the properties under its control in such a manner that no municipality, consumer or class

of consumer receives from the Commission either more or less favourable treatment than any other municipality, consumer or class of consumer—all are served on the same fundamental basis. To accede to various proposals that have been made would involve not only a breach of trust on the part of the Commission, but also the destruction of one of the fundamental principles of the whole Hydro electrical undertaking which has contributed most largely to its past achievements and which is indispensable to a successful continuance of its activities.

Rural Consumers Receive Special Consideration

In Ontario there is a general recognition on the part of the Government and of the citizens at large, that for a well-balanced development of Provincial resources, not only manufacturing industry but also agriculture should profit by the extension of electrical facilities. The policy of the Commission has been and is to make a distribution of electrical energy as widespread as possible and to extend to every community that can economically be reached by transmission lines the benefit of electrical service. The Commission generates power and transmits it in wholesale quantities to the point where it is delivered to the individual municipality or to the rural power district. Up to the point of wholesale delivery, the method of arriving at the cost of power employs the same fundamental principles for both urban municipalities and rural power districts; that is to say, it is power *at cost*. The distribution of power at retail is, however, more costly in rural power districts than in closely-settled urban communities. In order to facilitate a wider extension of service to agricultural areas than would be economically possible were the rural consumers—like the urban consumers—required to pay the full costs incident to the distribution of service to them, the Government of the Province has given special financial assistance towards rural distribution systems. Thus the rural power districts receive from the Commission as their trustee precise equality of treatment with the urban municipalities, but the rural consumers receive from the Ontario government through the Commission special aid which is not accorded to the consumers in cities and towns.

The misconceptions that have been cited evidently arise largely through a misunderstanding of the functions and status of the Commission and of the features which essentially characterize rural electrical service in the Province of Ontario. To some extent also, these misconceptions are clearly traceable to the influence of certain

NOTE: The term *rural* as used in this pamphlet relates to consumers or to service in agricultural districts, including hamlets or small villages, such as are embraced in the *Rural Power Districts* of Ontario. The term *urban* relates to consumers or to service in cities, towns, suburban areas and the larger villages, which in Ontario operate their own electrical utilities.

propaganda originating outside of the Province, and indeed outside of Canada, but which have appeared in publications circulated in Ontario.

It is proposed herein first to review some of the aspects of the Commission's work with respect to which there appears to be imperfect understanding, and then to clear up specifically some of the erroneous impressions that are known to exist regarding the cost and other features of rural electrical service as rendered by the Commission.

Commission is Trustee for Each Partner Municipality

The functions and powers of the Commission are clearly defined and limited by the *Power Commission Act*. Briefly stated, the Commission is simply a trustee and administrator, acting on behalf of the municipalities—both urban and rural—which collectively and individually own the properties administered. Just as the executor of several estates disburses the necessary expenses of administration for each estate, and credits to each beneficiary the net yield of his own share of the property under administration, so correspondingly the Commission keeps a separate account for each of the municipalities and rural power districts co-operating in its hydro-electric undertakings; each municipality or rural power district is charged with the expenses in respect of its own definitely apportioned share of property, is credited with the revenues paid from month to month, and receives a statement of the balance, if any, existing at the end of the year. Where a specific item of equipment or other property is employed in the service of two or more municipalities, the apportionment is made in proportion to the relative use made of the property by each municipality. Thus, from the very nature of the legislative provisions under which the Commission is constituted the Commission does not, and cannot, make any profit, nor can any municipality—rural or urban—benefit at the expense of another.

Now, the point which it is wished to emphasize in connection with the enquiries that from time to time have been made regarding rates for rural electrical service is this—that not only is the Commission a trustee for *all* of the municipalities *collectively*, charged with the provision of electrical service at the lowest costs consistent with high quality and sound finance, but the Commission is also constituted by law a trustee for *each* municipality *individually*, in respect of the municipality's share of the collective property committed to the Commission's administration. Just as the executor of several estates is restrained from diverting the revenues of one estate to the beneficiaries of another estate, so the Commission could not, without breach of its trust, charge up part of the costs of one type of service—such as rural service—against profits it might be possible to earn in supplying another type of service such as urban service, at rates higher than cost.

Thus, in answer to the frequent enquiries asking "why does the Commission charge the rural consumers on a scale that is different from those in the cities?" it may be replied simply that the Commission cannot do otherwise, without violating both the law and the principles of equity. The expenditures made on behalf of each of the municipalities are separately recorded. Owing to variations in many factors outside the Commission's control, such as transmission distance, number of consumers per mile of line, amounts of power used per consumer, etc., the costs of service in different municipalities are unavoidably unequal, and to give service in all municipalities, rural and urban, at the same rates or at a smaller difference than now exists, would thus necessarily involve the appropriation of moneys belonging to one municipality and applying such moneys to the purposes of another municipality.

**A Departure from "at-cost" Policy
Would Jeopardize the Undertaking**

It may here be commented that the provisions of the *Power Commission Act* which require a separate accounting for each municipality's share in the collective enterprise have been fundamental to the success of the whole undertaking throughout its existence. Indeed, it is very doubtful if the project could ever have been initiated or successfully operated but for the wisdom and foresight displayed by those pioneers who made this provision part of the foundation upon which they built. What municipalities (except those whose costs were highest) would have been willing to join an organization which might commit them to paying an indefinite sum of losses attributable to high costs in other municipalities? Again, as the transmission lines push farther and farther afield from the source of power, each additional municipality added to the system, other things equal, would entail unit costs higher than the average of those previously connected; that is, a new partner would become a liability rather than an asset to the earlier partners, and under such circumstances, the prospect of an harmonious partnership and extension of service would indeed be jeopardized.

On the other hand, operating under the principle of *service at cost* and mutual co-operation, as actually embodied in the Hydro electrical undertaking as it exists to-day, the urban municipalities welcome the rural municipalities into the partnership. Owing to the relatively small amount of power as yet taken by the rural systems, any benefit reaped by the urban municipalities resulting through the slightly enlarged scale of operations, relatively is so small as to be negligible, but having the assurance that extension of service to rural municipalities does not impose any handicap to them in connection with the extensive investment for which they are responsible, the cities and towns rejoice in seeing the benefits of electrical service extended in an ever-widening area with growth in activity and wealth, to all concerned.

**Transmission Networks Serving Urban Municipalities
Make Possible Ontario's Extensive Rural Service**

Proceeding next to a consideration of problems connected with the cost of rural service, it is necessary to understand that the extensive rural electrical service provided at such favourable cost to the consumer could never have been provided unless it had been for two very favourable governing factors. First is the fact that the municipalities of the larger urban centres which in the first instance co-operated to provide the large capital required for the generating stations and the extensive main transmission and distribution networks, have brought low-cost electrical energy both to large and to small urban centres of the Province. The great networks of transmission lines which serve urban municipalities thus constitute the base from which rural primary lines may economically be extended over wide areas of the more closely-settled parts of rural Ontario. Therefore, although the aggregate mileage of rural primary line is large, it can be appreciated that any individual rural line has only to be run a relatively few additional miles from some urban centre as contrasted with the great distances that, in most cases, are necessarily covered in bringing to urban municipalities power supplies from the distant generating stations on the Niagara river and elsewhere. Had the electricity not been so carried to urban centres there would have been no possibility of having anything approaching the low-cost rural electrical service that now obtains.

**Special Assistance to Agriculture by
Government "Grant-in-Aid"**

The second factor is that the Government of the Province of Ontario has always shown special interest in the welfare of the agricultural community. In promoting the basic industry of agriculture, the Government has established agricultural schools, colleges and experimental farms and has constructed highways, bridges and other works at the public expense. It has also given assistance towards farm drainage and aided in other ways. In pursuance of this general policy of aiding agriculture, the Government, with the concurrence of the citizens generally, has entered wholeheartedly into the problem of satisfactorily solving the inherently difficult task of extending electrical service to rural districts. Prior to 1921 service was given to rural consumers through certain individual municipal utilities. The rural consumers thus served, who numbered about 2,900 in 1920, were for the most part reached by short rural extensions to the existing urban and suburban distribution networks. In 1920 the provincial Government by an amendment to *The Power Commission Act* provided for the formation of "rural power districts" and, in 1921, passed *The Rural Hydro-Electric Distribution Act, 1921*, which provided for the payment of a "grant-in-aid" of "fifty per cent of the *capital cost* of constructing

and erecting in the rural power zone primary transmission lines and cables." Each rural power district covers the area which can economically be served from one or more central points of supply, and thus usually includes parts of two or more townships. The Commission, as trustee for the respective townships, builds the lines and operates the rural power districts, thus securing for the consumers the advantages and economies of co-ordination, standardization and larger-scale operation.

These two legislative provisions, for the formation of "rural power districts" and for the payment of a "grant-in-aid" laid the basis for a decade of remarkable expansion in rural electrical service in Ontario. The Government, however, did not rest there. In 1924, the grants-in-aid were extended so as to cover "fifty per centum of the capital cost of constructing and erecting in the rural power district primary transmission lines and cables, service transformers and meters, and secondary lines on the highway required for the delivery of power in such rural power district," that is to say, in providing equipment from the distribution centre of city, town or village to the boundary of the rural consumers' property. This further assistance to comprise the equipment in addition to the primary lines and cables gave additional impetus to a rapidly growing service, and during the same period the movement was being advanced by highly economical methods of rural line construction and operation which had been standardized by the Commission. (Consult diagram on page 17.)

Remarkable progress followed, and the period from 1924 to 1929 was one of phenomenal growth as the rural communities became aware of the increased facility with which rural service could be provided and the benefits that followed its adoption. There remained, however, two directions in which by government co-operation fuller utilization of the rural services might be attained and, in 1930, two special Acts were passed to further aid consumers in rural power districts.

Loans to Rural Consumers

The first of these was *The Rural Power District Loans Act, 1930*. Certain farmers and others in rural power districts who desired to take full and early advantage of the hydro-electric service were deterred by the difficulty of financing the cost of the necessary wiring and equipment on their premises. By this Act, provincial funds up to a maximum of \$2,000,000 were made available to the Commission and authority given it to make to rural consumers loans, not exceeding \$1,000 for any one consumer; but in all cases the consumer has to

co-operate by furnishing adequate security. In respect of wiring on the consumer's premises and in his buildings, and also in respect of motors and appliances for the utilization of electric service, loans may be made under regulations which provide for repayment with interest at six per cent, over various periods depending upon the character of the equipment, but not in any case exceeding twenty years.

Government Guarantees Low Service Charges

The second of these later Acts was *The Rural Power District Service Charge Act, 1930*. It had been found that in many newly-established rural power districts, a proportion of the inhabitants postpone their use of hydro-electric service until the favourable experience of their immediate neighbours has convinced them that they cannot longer afford to be without the service. This condition had made it necessary at the commencement of service in a rural power district to employ relatively high service charges, which were progressively reduced as the number of consumers per mile increased. As a result, the more progressive consumers who had supported the undertaking from the commencement were placed under rather an unfair handicap. Also, the use of the higher service charges at the inauguration of service in itself tended to reduce the number of consumers initially taking the service. By this Act, the Lieutenant-Governor-in-Council is empowered, on recommendation of the Commission, to fix maximum service charges for the respective classes of rural service, and any deficit resulting in a rural power district from these service charges is made chargeable to the Province until such time as it can be repaid out of surplus arising when the rural power district concerned has become well-established. The effect of this encouraging measure is to enable rural service to be supplied, even in the initial years of operation of a rural power district, under service charges which nowhere in the Province exceed for "Class 3" rural service, the sum of \$2.50 per month net, and with correspondingly moderate charges for the consumers of other classifications.

Having reviewed important aspects of the Commission's work with respect to which there has been imperfect understanding, and having seen that the rural electrical consumer receives special consideration and assistance from the Government in three ways,—first, an outright "grant-in-aid" of 50 per cent of the cost of distribution lines and equipment; second, loans up to \$1,000 for wiring and equipment; third, a special service charge which for a time at least may be below actual cost,—attention may now be directed specifically to the contention of some that the cost of electrical service to farms in Ontario rural power districts is unduly high. Such incorrect representation has often been based upon very misleading comparisons.

**Misleading Propaganda Have Been
Employed to Obscure the Facts**

When the Commission affirms that the rural electrical service provided in Ontario is unsurpassed for any comparable territory or circumstances it does so advisedly, in the knowledge that both the efforts that have been put forth to effect widespread distribution at minimum costs in agricultural areas, and the results that have been achieved are of an exceptionally extensive and favourable character. Various comparisons have been published which mislead because they are not upon a fair basis.

For example, in some territories outside Ontario intensive agriculture is carried on by the aid of irrigation, and the heavy electrical demands entailed for irrigation pumping in such territories provide revenues which carry the bulk of rural distribution costs. In other cases, heavy loads of a special character are similarly available to assist in carrying costs. In such areas—as, for example, in certain parts of the United States—service for farm residences is more in the nature of a by-product, secured under circumstances so widely different from those prevailing in Ontario rural areas as to render comparisons valueless.

In other areas outside the Province of Ontario the term *rural service* is frequently employed to denote the service supplied in *suburban* areas adjacent to the borders of large cities, although the service may to a limited extent include individual consumers engaged in agricultural activities. Such service is essentially *suburban* service and, indeed, the term suburban frequently appears in electric rate schedules applicable to these areas. Obviously, if—as has been done—the cost to the consumer of such *suburban service* is compared with the cost of Hydro *rural service in Ontario*, reaching, as it does, extensive areas far removed from cities and towns, the comparisons made will be unjust and misleading.

Again, where rural service is given under forms of rate schedule which—unlike those used in Ontario—fail justly to apportion the respective costs of service among the various types of consumers, there may exist a few consumers who receive service below cost, and at the expense of their neighbours. If the charges to such exceptionally favoured consumers are compared with the Ontario rural charges based upon “cost,” an erroneous impression is obtained.

Or again, where comparison is made between Ontario rates and those appertaining to areas in which the rural lines are constructed out of funds initially provided in whole or in part by the consumers themselves, and the rates for service are thus relieved of capital charges, the result is seriously misleading.

It may definitely be asserted that all of the several statements that have been circulated in Ontario and that have come to the Commission's attention, purporting to indicate that rates for electrical

service in Ontario rural power districts are high, depend for such apparent plausibility as they may possess, upon features such as those that have just been cited.

Cost of Hydro Rural Service is Demonstrably Low

With respect to the success that has been achieved in Ontario in providing electrical service to rural consumers at low costs, it is a significant fact—perhaps not generally known in Ontario—that not only are Ontario rural rates lower than rural rates in other comparable territories, but they are in important respects actually *lower even than urban rates* to domestic consumers in many large cities outside Ontario. For example, a government statement just published with respect to a populous area outside Ontario—in which some 74 electrical service utilities supply urban communities of from 10,000 to more than 1,000,000 population—lists the minimum costs charged to domestic consumers for a monthly consumption of 250 kilowatt-hours* in these large urban communities. The costs as tabulated range from \$6.63 to \$22.65 per month, while in more than half of these cities outside Ontario the costs to domestic consumers exceed \$10.00 per month.

In contrast with these *urban* charges outside Ontario, the cost of 250 kilowatt-hours per month to an Ontario “Class 3” *farm* consumer may be cited. No Class 3 farm consumer in any of the Commission’s rural power districts pays more than \$9.27 per month for 250 kilowatt-hours per month, and, according to the rates applicable to more than 80 per cent of the Ontario rural consumers, the cost to a Class 3 farm consumer for 250 kilowatt-hours ranges from \$8.14 per month down to as low as \$5.72 per month. Stated in different terms, the lowest charge cited in any of the *cities* of the territory outside Ontario is *15 per cent higher* than the lowest charge to Ontario Class 3 farm consumers for the same monthly consumption. In more than half of these cities, the charge to the urban domestic consumer is from 10 per cent to more than 100 per cent higher than the *highest* charge to any Ontario Class 3 farm consumer, for the same monthly consumption.

In view of facts such as the foregoing, which are based upon the latest published reports of governmental authorities, it will be understood why the Commission has no hesitation in definitely affirming

*The electric meter, which measures in *kilowatt-hours* the amount of electricity to be charged for, takes account both of the amount of *power* being used and the length of *time* for which it is used. The electrical unit of *power* is known as a *watt*. 1,000 watts is called a *kilowatt*, and is equal to about one and one-third horsepower. The horsepower unit is customarily used to measure the power required to operate motors and other mechanical devices, as contrasted with electric lighting or heating equipment. For example, ten 50-watt lamps would demand 500 watts or one-half kilowatt of power for their operation; if all the lamps were switched on for two hours they would use one kilowatt-hour. Similarly, a 4-horsepower motor demands 3 kilowatts of power and if operated at full capacity for one hour would use 3 kilowatt-hours.

that Ontario rural service is unsurpassed in any other comparable area. In citing these facts and supporting data, the Commission has no wish to disparage the work of other electrical utilities. Its object is simply to correct a wholly false impression which has been created in some quarters in Ontario. For the results achieved full credit must be given to the co-operation that has been extended to the Commission by the urban municipalities of Ontario, by the successive governments of the Province over a period of twenty-five years, and especially by the consumers in general—both urban and rural.

Misconceptions Regarding Extent of Differences Between Rural Charges and Urban Charges for Electricity in Ontario

Attention may now be directed specifically to the type of misconception which finds expression in the belief entertained by some that there is, within Ontario, an excessive difference between rural charges and urban charges for equal quantities of electrical energy. It has already been pointed out that—inasmuch as different *costs* unavoidably appertain to the provision of service under the widely different circumstances met with in different situations—the existence of some difference in the necessary *charges to consumers* for equal quantities of energy is inevitable—a difference which could be eliminated only by the unjust appropriation of funds belonging to some consumers, for the benefit of other consumers. It is clear from correspondence reaching the Commission that some exaggerated impressions exist regarding *the extent* of actual differences in charges and, as shall now be illustrated, these misconceptions result from an imperfect understanding of the essential bearing of necessary differences in conditions of service and in the forms of the rates.

Farm Service Combines both Household and Power Service

For example, the ordinary urban consumer is placed in one of three classes of service, domestic service, commercial light service or power service. The service usually supplied to farms,—for example, Class 3 service—is really a combination of domestic service with a power service.

In one critical letter recently received by the Commission it is stated: "We farmers would have to sign a twenty-year contract and, worst of all, pay a service charge every month of \$4.55, while you in the towns paid only 33 cents." The general tenor of the letter in which this statement is made manifests sincerity of purpose on the part of the writer, but a statement such as that quoted, inferring a ratio of respective costs of about 14 to 1, obviously is made with an incorrect understanding of the facts. For example, the 33 cents referred to—i.e., 30 cents net—is the service charge applicable to only one particular class of service in towns, namely, domestic lighting and small appliances. The \$4.55—which really meant \$4.10 net,

and which the government guarantee has since 1930 reduced to \$2.50 net—is the maximum service charge for a comprehensive Class 3 farm service which permits *in addition* the use of a full-size electric range and a 3-horsepower motor. The service charge in the urban municipality for the 3-horsepower motor alone would be from \$2.00 to \$2.70 per month net, a fact entirely ignored by the writer. Thus, for a service including full-size electric range and a 3-horsepower motor corresponding to Class 3 rural service, the urban consumer would have to pay a service charge of about \$3.00 per month net, which is substantially *more* than the maximum service charge paid by the farmer taking Class 3 service. This illustration is typical of a class of very erroneous statement appearing in numerous letters received by the Commission.

Charges for Rural Service not Greatly Higher than Charges for Urban Domestic Service

However, the most serious cause leading to exaggerated impressions regarding differences in relative costs of service to rural and to urban consumers, lies in the use of *service* charges alone as a criterion—as the writer quoted above has done—in place of the *total* charges making up the respective accounts for service. Leaving aside for the moment the fact that farm service includes power as well as residence service, it will be instructive to examine the actual relation which exists between the usual charges in large urban municipalities, in small urban municipalities and in representative rural power districts. A tabulation has been made upon a basis of the *total* costs to a farmer or urban domestic consumer who makes a fairly liberal use of the service, thus not only obtaining for himself the full benefit conferred by the utilization of electrical energy, but also helping to make possible for his own benefit and that of his neighbours the successive reductions in rates that have characterized Hydro service in both urban and rural areas. Such a consumer ordinarily would use, for lighting, appliances and cooking, about 200 kilowatt-hours or more per month.* The tabulation follows:

*It should be noted that, in having used a monthly consumption of 200 kilowatt-hours for purpose of illustrating the point that in some quarters a grossly exaggerated impression exists with regard to the relative levels of charges made to farmers and to urban consumers, the data given relate to what may be termed a *normal* utilization of electrical energy, rather than to *average* consumptions in Ontario under present circumstances. By a normal utilization is meant the electrical energy which would be representative of that used by those consumers who had been using the service for some time and had progressively installed electric ranges and other equipment to enable them to take proper advantage of the service made available. Because of the fact that the number of rural consumers is increasing year by year at a rapid rate, averages for the Province at any moment include a large proportion of consumers who have not had time to instal more than a small part of the electrical equipment they will in the course of a short time find it advantageous to use. The use of 200 kilowatt-hours as a representative normal farm consumption is based on actual results in a number of rural power districts in which the proportion of new consumers to the total is not so large as for the Province as a whole.

COMPARATIVE CHARGES FOR HYDRO SERVICE IN REPRESENTATIVE
RURAL POWER DISTRICTS AND URBAN MUNICIPALITIES SHOWING
THAT THE DIFFERENCES IN TOTAL CHARGES FOR SERVICE
ARE VERY REASONABLE

Case	Class of consumer	Description of service	Total net monthly bill for 200 kilowatt-hours per month	
			In newly-established utility or rural district with adverse conditions	In well-established utility or rural district with favourable conditions
			\$ c.	\$ c.
A	Rural Class 3 Ordinary Farm Service	Lighting for House, <i>Barn and Outbuild- ings.</i> Power for Small Domestic Appliances and Electric Range. <i>Also for Miscellaneous Small Farm Equip- ment and 3-Horse- power motor.....</i>	7.62 (a)	5.42 (b)
B	Rural Class 2 Small Farm Service	Same as Case A except capacity of motor limited to 2 Horse- power.....	6.78 (a)	4.83 (b)
C	Urban Domestic in smaller Municipalities	Lighting for Home- Power for Small Do- mestic Appliances and Electric Range.....	5.32 (c)	4.04
D	Urban Domestic in larger Cities	Same as Case C.....	4.90 (d)	2.94
E	Urban Domestic with small Power Service Larger City	Same as Case D but with 3-Horsepower motor for small work- shop.....	---	5.60 (e)

- (a) In 1930 fewer than 4 per cent of rural consumers paid rates on a scale higher than that used in computing this figure.
- (b) In 1930 some 9 per cent of rural consumers paid rates on a scale as low as or lower than that used in computing this figure.
- (c) In 1930, in more than 50 of the smaller and more remote urban municipalities, the urban domestic consumers paid rates higher than those used in computing this figure. Such costs are, of course, not representative of Ontario urban domestic consumers *in general* since only a fractional percentage of the total domestic consumption appertains to such municipalities in the aggregate. The figure cited is, however, representative of costs under *urban* conditions which most nearly approximate the circumstances met with in providing *rural* electric service.
- (d) For many years all Hydro utilities in larger cities have been well-established, and, consequently, it was necessary to refer to an earlier year to obtain an example of a newly-established utility in a larger city. This figure relates to 1917, for one of the larger cities.
- (e) Assuming intermittent use of the urban consumer's workshop motor as is usual in the case of farm service.

An examination of the foregoing authentic and representative tabulation of comparative charges will show how exceedingly incorrect are the inferences that may be drawn from statements respecting

alleged high charges for rural service such as those which, from time to time, reach the Commission's attention. The inference in the letter that has been quoted—based on "service charges" alone and using incorrect data—is that the costs to urban consumers are but one-fourteenth of the corresponding costs to rural consumers. The actual fact as indicated by the tabulation of *total* charges, using correct data, is that as a general proposition the ratio between the total charges to rural and urban consumers for corresponding service is much less than two to one. Having regard to the influence of varying circumstances upon costs in different municipalities, the excess of the rural charges to farmers over urban charges to domestic consumers is exceedingly moderate. Indeed, a not inconsiderable proportion of Ontario *farm* consumers who receive service under relatively favorable circumstances and who have co-operated wholeheartedly with each other and with the Commission to make that fuller employment of the service which has made possible successive reductions of rates, are now served at costs even lower than those which appertain to domestic consumers in a number of small *urban* municipalities where relatively unfavourable conditions affecting cost exist, or even than those which existed in some large cities in the early years of Hydro operation.

Of course, an important factor in reducing the costs to Ontario farmers has been the special aid granted by the Ontario government in respect of rural distribution; without this assistance, the basic handicaps which appertain to rural distribution as contrasted with urban distribution would have necessitated a greater difference between rural charges and urban charges for the same quantity of electrical energy than the very moderate difference that actually exists.

Why Rural Distribution is Necessarily More Costly

Having now definitely affirmed that charges for rural electrical service in Ontario are intrinsically low, and having shown how, under the principle of service "at cost," the urban consumer bears his full proportion of the costs while the rural consumer receives governmental aid which is not so received by urban consumers, with the result that the difference in charges is very moderate, it may add to the fuller understanding of the subject of rural electrical service if there is supplied an answer to a question which is often asked, namely, why does rural electrical service *cost* more than urban service? Briefly stated, the principal reasons are as follows:

(1) Primarily, the difficulty is one of scattered population and greater distances between consumers, resulting in a much higher capital investment per rural consumer for the necessary transmission and distribution lines, with consequent higher annual costs. In round figures and for the purpose of illustration, it may be stated that the number of consumers served by a mile of line is about 20 to

50 times greater in the cities than in Ontario rural areas. It will be appreciated, therefore, that the capital investment for such important items of cost as poles, insulators and conductors, to serve *each* rural consumer is much higher than the corresponding costs for *each* urban consumer.

(2) In the case of isolated farm consumers each service requires a separate transformer and switching equipment. In the case of urban service one transformer usually serves a large number of consumers, and, moreover (due to the important factor of diversity), for a given aggregate connected load the transformer capacity required per consumer is much less in the case of urban centres, and therefore less costly.

(3) The operating costs due to the distances to be covered, to the exposed weather conditions and to other factors, are relatively high in the country. These have to be borne by perhaps three to ten customers per mile of line, instead of by some 200 or more as in the city.

It should be understood that although the Government contribution of 50 per cent of capital costs for rural distribution is of substantial assistance in reducing interest and sinking fund costs, it does not, of course, effect a 50 per cent reduction in *total* costs of rural service. Such items as depreciation, operation and maintenance costs apply on the whole capital investment and, except as modified by the Government's guarantee in respect of maximum service charges, these costs and the rural power districts' proportional share of wholesale costs of power must be met out of the revenues from consumers.

Thus, in view of the features which inherently constitute serious handicaps to the provision of rural electrical service at low cost under the conditions found in Ontario agricultural territory, it will be appreciated that had it not been for *the Commission's most earnest efforts to design and standardize economical methods of rural distribution together with government assistance* it would have been impossible to provide service to farmers and other rural consumers at the low rates that now prevail in Ontario rural power districts.

Critics outside the Province who acknowledge that costs of electrical service in Ontario are low, sometimes misrepresent the true nature and extent of Ontario's rural grant-in-aid, in an attempt to show that the success of the Hydro undertaking as a whole is based upon governmental subsidies.

Rural Consumers Contract for Service on Terms Ensuring Permanently Low Costs

With respect to extension of service to new rural consumers, the Commission stands ready to build its rural lines wherever, within

economical transmission distance from sources of supply on its transmission lines, the equivalent of three ordinary farm contracts can be secured per mile of rural distribution line. The minimum requirements of service charges to be guaranteed by three farm consumers (Class 3) aggregate nowhere in Ontario in excess of \$7.50 per month per mile of line—\$2.50 per month for each consumer. The Commission does not require the rural consumers to provide free rights-of-way, or to make any contribution either in cash or labour toward the capital cost of rural distribution lines at the time they are constructed, nor does it require a deposit from the consumer before service is given.

The twenty-year contract covering these moderate service charges is a feature of Ontario rural electrical service which experience has shown to be necessary to protect the interests of the consumers themselves, on whose behalf the Commission, in the capacity of trustee for each and all consumers, administers the properties *at cost*. The rural consumers are, in effect, partners embarking in an undertaking involving collective responsibility for a substantial capital investment which is to be liquidated only over a period of years. Rural lines are constructed by the Commission on a basis of representations made by prospective consumers, who rely on each others' participation for assurance that the costs that will be chargeable to each consumer will be within economical limits. If some of those who had represented themselves as prospective partners were permitted at will to withdraw their entire support, clearly an unfair burden would be placed upon those who remained. The contract provision thus constitutes between consumers a mutual guarantee with respect to service charges and indeed has been of substantial assistance in giving permanent assurance of moderate costs, without which assurance extensions of rural service would be greatly hampered.

In order to illustrate the liberal nature of these provisions for extension of rural service in Ontario, some requirements that are made elsewhere may be noted. In an area outside of Canada which, in many respects, is comparable to Ontario, but which is more densely populated, such material progress in rural electrification has been made that this area claims second place on this continent in point of number of farms electrified. The progress made in this territory is largely attributed to a system of rural extensions which is officially described as providing "for a guarantee of approximately \$24 per month per mile of line before the company will provide an extension." That is to say, the Ontario Hydro Commission's requirements of guarantees for extensions are less than one-third of those imposed upon agriculturalists in this other area which occupies a place of leadership in rural electrification.

In another extensive and densely populated territory outside of Canada, where rural service is widely employed, the farmers are required to secure all rights-of-way before the electrical service company will undertake construction of the rural extension, and also to deposit the sum of \$1,000 per mile of line—to be refunded in full only if from ten to sixteen consumers per mile take the service.

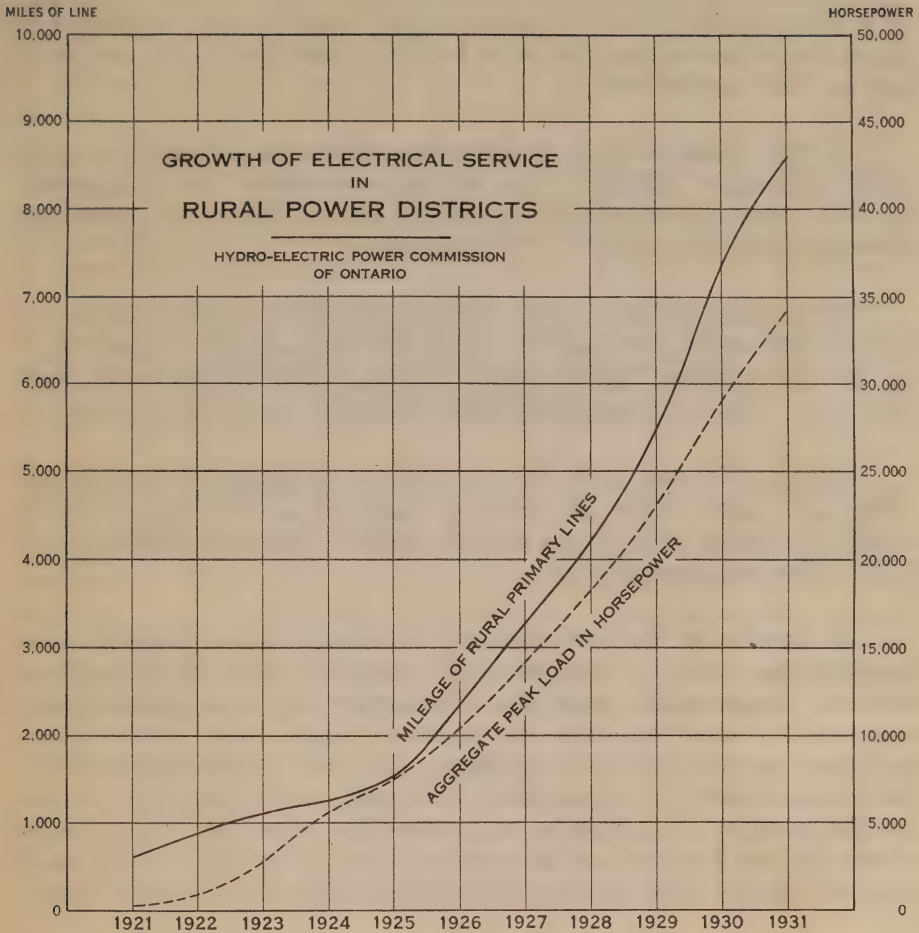
In view of these officially recorded facts, it must be conceded that the outstandingly moderate requirements made by the Commission in respect of extensions, place the Ontario farmer in an exceptionally favourable position.

Representative Costs of Rural Service

In connection with its rural service, the Commission has provided flexible rate schedules comprising various combinations of electrical equipment which farmers, in accordance with their different individual circumstances, may desire to provide. The accompanying table gives representative costs under four of the most popular classifications of service—classifications, indeed, which comprise more than 90 per cent of the Commission's rural consumers.

REPRESENTATIVE COSTS OF ELECTRICAL SERVICE IN ONTARIO
RURAL POWER DISTRICTS WITH MAXIMUM SERVICE CHARGES

Class of rural service	Description of installation permitted	Net monthly service charge	Energy consumption per month kw-hrs.	Net monthly bill with consumption rates of:		
				6 and 2 cents	4 and 2 cents	3 & 1½ cents
		\$ c.		\$ c.	\$ c.	\$ c.
1B. Hamlet service, residences or stores	Lighting and Domestic Appliances up to individual capacity of 750 watts.	1.35	20	2.43	2.07	1.89
			30	2.97	2.43	2.16
			50	3.33	2.79	2.43
1C. Hamlet service, residences or stores	Lighting, Domestic Appliances, Electric Range and Water Heater.	2.10	100	4.98	4.44	3.85
			150	5.88	5.34	4.53
			250	7.68	7.14	5.88
2B Farm service, Small. (50 acres or less.)	Lighting for House and Out-buildings, Power for Domestic Appliances and Miscellaneous small equipment and for Electric Range, Water Heater and 2-Horsepower motor.	2.10	100	4.98	4.44	3.85
			200	6.78	6.24	5.20
			300	8.58	8.04	6.55
3. Farm service, Light. (ordinary farms)	Lighting for House and Out-buildings, Power for Domestic Appliances and Miscellaneous small equipment and for Electric Range, Water Heater and 3-Horsepower motor.	2.50	150	6.72	5.96	5.10
			250	8.52	7.76	6.45
			400	11.22	10.46	8.47



NOTE: The above diagram shows the remarkable growth that has taken place in rural electrical service as given by the Commission in rural power districts. The growth is especially noteworthy since the year 1925. The mileage shown is the total mileage of rural primary lines approved for all systems at the end of the year. The peak load is the greatest amount of power taken in any month during the year by all rural power districts.

Growth of Rural Service an Evidence That Costs are Reasonable

Perhaps the best evidence that the charges for electrical service in the rural power districts of Ontario are reasonable is the enthusiastic support given to the service by the great majority of rural consumers, as evidenced by the rapid extension of service under the policy and administration of the Commission and the co-operative assistance supplied by the Government. The farmers of Ontario have welcomed

the possibility of obtaining efficient lighting along with the advantages of a very flexible form of power supply such as are combined in Hydro rural service, and are now taking advantage of the service as fast as lines can be built.

In 1920, there were in Ontario about 305 miles of rural line with 2,880 consumers taking a load of approximately 300 horsepower. In 1931, these figures had grown to 8,400 miles of line, and 55,000 consumers taking more than 31,000 horsepower.

The capital investment in rural power districts now amounts to \$15,730,000 and approximately half of this investment is represented by the Government "grant-in-aid," so that rural consumers in their rates have to pay interest and sinking fund only on half the investment.

During 1929 and 1930, the Commission constructed respectively 1,044 and 1,891 miles of rural primary line. General economic conditions during 1931 were not so favourable, but nevertheless about 1,470 miles were constructed.

No portion of the Commission's work has received more detailed consideration than its operations in connection with rural electrical service. In the earlier years the Commission sent out demonstration equipment in order to arouse the interest of agricultural communities, and year by year it has co-operated with local public-spirited committees, arranging for its engineers to attend public meetings for the specific purpose of explaining to prospective consumers the rates at which electrical power can be supplied, the uses which can be made of power on the farm, and the procedure necessary to obtain service.

Every agriculturalist knows that many pests and injurious growths attack the products of his land. These attacks often descend as "from a blue sky" and the results are sometimes observed only after the destructive agencies have made considerable headway. As knowledge has increased, the producer, the scientific investigator and the government experimental agriculturalist have been able to co-operate to head off the ravaging attacks of many enemies of both plant and animal life. Preventive measures may be taken against various diseases and corrective action may be employed. Nor does stalwart and vigorous growth always ensure against trouble. Indeed, it almost seems as though the efforts of growing things to attain perfection evoke a jealous attitude from enemy agencies and incite them to attack. And even when the product is ready for market how often has effort been made to damage the market. "Eternal vigilance is the price of safety," is nowhere more truly applicable than in the practice of agriculture with its allied branches of fruit growing.

Now there is a close similarity between the experience of the agriculturalist and that of the municipally-owned Hydro undertaking. From its very inception "Hydro" has been an object of attack. Sometimes from enemies within its field of action, sometimes from the blighting effect of unfair hostile criticism made by outsiders, sometimes from definite efforts to stunt its growth, sometimes from efforts made to injure its markets. The business of producing and distributing electricity is of a technical nature, and misrepresentations are not infrequently made even by well-intentioned persons, simply as a result of imperfect understanding of the factors involved. It is believed that misconceptions that arise either from intentional misrepresentations, or from failure to appreciate the essential nature of governing factors, are capable of lessening confidence in the justice of the principles upon which Hydro is founded; and therefore may prevent the rural dweller from recognizing the exceptional advantages he possesses in the rural electrical service that has been created for his benefit. Destructive influences should be as promptly detected and destroyed in the sphere of Hydro service as in the sphere of farm products. Sir Adam Beck time and again counselled for co-operative and sustained confidence. The words in one of his public statements well express his view. "So long as the municipalities," said Sir Adam, "retain their confidence towards each other and towards their Commission, no assaults, no matter what their character may be, can prevail against their great and successful co-operative undertaking."

This pamphlet has been prepared to help the rural consumer to know his Hydro undertaking more intimately. It shows how justifiably he may place his confidence in the electrical service provided, —a service which has been made possible by the co-operation of the urban municipalities, the Commission and the Government.

Citizens of Ontario, both urban and rural, have reason to be proud of their co-operative electrical enterprise. Of the material factors which contribute to the healthy growth of modern communities none is more beneficial than an ample supply of low-cost electrical power. It must, however, be recognized that rural electrical service, especially, is essentially a community interest and to attain its greatest success must have the wholehearted support of all rural dwellers.

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